

5 **WHAT IS CLAIMED IS:**

1. A method for optimizing the image quality of movable subjects imaged with a microscope system, comprising the following steps:
 - a) acquiring a plurality of images having a plurality of pixels;
 - 10 b) determining a respective displacement vector field from a comparison of the pixels of each two chronologically successive images;
 - c) identifying a trajectory for each pixel of the image from the displacement vector fields; and
 - d) applying an operation to the image data along a trajectory.
- 15 2. The method as defined in Claim 1, wherein the operation along the identified trajectory is a deconvolution, a smoothing, an averaging filter, or any operation acting in time-lateral fashion.
- 20 3. The method as defined in Claim 1, wherein the plurality of acquired images are conveyed to an image memory; and parallel therewith, data from the plurality of acquired images are conveyed to an optical flow calculator and to a trajectory tracker and to a trajectory memory.
- 25 4. The method as defined in Claim 3, wherein for the application of a filter, data of the acquired images can be retrieved from the image memory, and corresponding data can be retrieved from the trajectory memory, and can be correlated.
- 30 5. The method as defined in Claim 4, wherein the data generated by application of the filter can be conveyed to a second image memory.
- 35 6. The method as defined in Claim 1, wherein the microscope system contains a scanning microscope or a conventional microscope.

- 5 7. An arrangement for optimizing the image quality of movable subjects
imaged with a microscope system, the microscope system comprising: at
least one objective defining an image window, a detector unit for acquiring a
plurality of images each having a plurality of pixels, a computer system,
which encompasses a means for determining a respective displacement
10 vector field from a comparison of the respective pixels of at least two
chronologically successive images, a means for identifying a trajectory for
each pixel of the image from the displacement vector fields, and a means for
applying an operation to the image data along a trajectory.
- 15 8. The arrangement as defined in Claim 7, wherein the means for applying an
operation to the image data along a trajectory encompasses a deconvolution
means, a smoothing means, or an averaging filter, or any operation operating
in time-space fashion.
- 20 9. The arrangement as defined in Claim 7, wherein a first image memory is
provided which stores the data of the plurality of acquired images; and a
second image memory is provided which stores the data created by the
correlation of the data from the first image memory with the data from a
trajectory memory.
- 25 10. The arrangement as defined in Claim 7, wherein the microscope system
encompasses a scanning microscope or a conventional microscope.
- 30 11. Software on a data medium, wherein the software causes a microscope
system to carry out a method as defined in one of Claims 1 through 6.